

BRIEF DESCRIPTION OF THE DRAWING

Figure 1 is a perspective view of a key-surround inputting device according to the present invention.

Figure 2 is a bottom view of the key-surround inputting device of **Figure 1** according to the present invention.

Figure 3 is an exploded perspective view of a key-surround inputting device according to the present invention.

Figure 4 is a perspective view of a middle key and a key-arrangement key surround key according to the present invention.

Figure 5 is a frontal view of a display depiction of a key-surround inputting device and part of its touch screen according to the present invention.

Figure 6 is a top plan view of the inputting device, cross-sectioned at various keys according to the present invention.

Figure 7 is a top plan view of the inputting device, cross-sectioned at various keys according to the present invention.

Figure 8 is a top plan view of the inputting device according to the present invention.

Figure 9 is a top plan view of the inputting device according to the present invention.

Figure 10 is a cross-sectional top view of the inputting device of **Figures 6-9**.

Figure 11 is a cross-sectional top view of the inputting device of **Figure 10**.

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SEP 12 2002

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DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

Referring to **Figure 1**, an FP-KSM embodying principles of the present invention is shown from a top plan view to have a middle key **1** at its focus and an optional bordering wall **1a** which may separate the middle key from its most adjacent key-surrounding **2**, optional dividing wall **2a**, in this case outermost key-surrounding **3**, peg appendage **4** to be used in tracks described below and key base **5**.

Figure 2 illustrates a bottom view of the key of **Figure 1**, where **6** is the bottom of said key, **7** illustrates said peg and **8** depicts the track crossing to which said peg is attached.

Figure 3 illustrates an exploded key-surround module inputting device having middle key **8** at its center without a dividing wall between the focal key and key-surroundings nor one between key-surroundings. Key-surrounding **10** has in this case a slightly rounded surface. Points at its entire circumference are raised slightly in height above the inner height of inner circumference of key-surrounding **19** thereby making the edge of key-surrounding **19** easier for the user to press. Key-surrounding **10** is at a height which is at an optimum at point **4** and all similar points at its entire circumference. Alternatively, such a key-surrounding may be sculpted to be raised, indented, texturized or a combination thereof at any point or points on said key-surrounding. Flexible springing material which surround the inner and outer of said key-surrounding **10** aid in the pivotability of the key-surround and are illustrated at points **11** and **12**. Actuating contact is made when an actuating contact point **14** comes into contact with an actuating appendage **13**. The washer of **15** is attached to the bottom of key-surround **10** and has a small tooth **16** which sits in curved space **17** in washer **18** and slides therein when said washers slide on top of each other. The curved space allows the key-surround to be rotated but in a limited rotation. Washer **15** is secured to the base of key **10**. Key **10** fits within key-surround key

19 which is similar to key 10 except in size. Washers 20 and 21 work identically to washers 15 and 18. Base 22 frames and holds keys 8, 10 and 19 and washers 18 and 21.

Figure 4 is an exploded view illustration of a middle key and key-surrounding 23 which can be substituted for keys 8 and 10 of the illustration of **Figure 3**. This is to illustrate that a key-surround module inputting device can have a combination of keys, in this case with the **Figure 4** substitution a middle key, a KA-KSM having in this case a circular arrangement with keys such as key 24 with divisions like that of 26 which can be either an optional dividing wall or a space which in this case is perpendicular to the circumference of the KS-KSM 23. A different shaped key can also optionally be used with said space or wall being at other angles with respect to said circumference.

Figure 5 is an illustration of a depiction by a display screen of a key-surround module inputting device. The display screen depicts and a key-surround module inputting device 27 with a background 27a. Touch screen 28 with sensors 28a not visible to the user is placed adjacent to said depiction. The sensors detect the user's touch and correlate the place of touch on said sensor with the field of said depiction.

Figure 6 is a top plan view of a key-surround module inputting device having in this embodiment a plurality of middle keys such as 31 which are to a certain extent surrounded by key-surround keys such as in the case of the key-surround key 38. Key 38 can be a key-arrangement key surround having a plurality of keys similar to key-surround key 33 on key-arrangement key surround key 30. Key-surround key 33 is cross-sectioned to reveal a plurality of actuating constructs which can be either capacitive or hard-contact actuating constructs. The plurality of constructs enables the key to be pressed at a plurality of points for actuation. The key surrounding 39 surrounded in part by said key 38 consists in this case at the cross-sectioned

corner 35 of a floating plural direction pivotable key-surround key having a plurality of actuating constructs beneath as shown in cross-sectioned portion 35. The right side of the key-surround module inputting device 29 and the left side 30 are made to be able to come apart at points such as point 38a and similar such points.

Figure 7 illustrates a top plan of another embodiment of the key-surround module inputting device where said inputting device 40 has a plurality of middle keys which are nested within a plurality of key-surround keys. Key-surround keys 41 and cross-sectioned key 42 are parts of two key-surrounding keys. In this embodiment the plurality of middle keys and the plurality of key-surround keys are supported in a curved format offering a more comfortable inputting position to the user. The key 42 can consist of a plurality of actuating constructs which are either capacitive or hard-contact actuating constructs as a key-arrangement key-surround key or as a floating plural direction pivotable key-surround key. This curvature also allows nesting module 45 and key module 46 to closer in proximity to the other keys of the inputting device at points 43 and 44 respectively.

Figure 8 illustrates a top plan view of another embodiment of the key-surround module inputting device. The inputting device 47 contains a key-surround inputting device 48 with a key-surround key 49 which is nearly a complete circular ring due to the necessity in this case of placing said key-surround inputting device 48 in close proximity to keys 51, 52 and 53 in order to save space on the surface of the inputting device. Said key 49 can This embodiment also contains key-surround keys such as 50 which is not concentric with regard to middle key 51 and key-surround 52.

Figure 9 is an illustration of a top plan of another embodiment of the key-surround module inputting device where a plurality of middle keys are surrounded by a plurality of key-

surround keys such as key 54 on the left side of the key-surround inputting device 55. Key-surround key 55 is an amorphous key-surround key which makes it more accessible to the user. This key can consist of a plurality of actuating constructs which are either capacitive or hard-contact actuating constructs as a key-arrangement key-surround key or as a floating plural direction pivotable key-surround key.

The figures are merely an illustration of some possible embodiments and the possibility for there to be a variety of key types in one key-surround module inputting device.

Figure 10 is a cross-sectional top view with pods 56 and 57 which are beneath left and right sides of certain embodiments of the key-surround inputting device that have left and right side groups. Points 61, 62, 64, represent the keys-surround inputting devices which rest on the cross-section which rests above this depiction of the key-surround module inputting device. Within path frame 59 of right pod 57 there are four pathways which move within said path frame horizontally between points 60 and 79, 63 and 78, 66 and 73, and 69 and 72. Inside these pathways are cylindrical stems which are at their tops connected to KSM pegs 61, 65, 68 and 71, which allow rotation and movement said pathways. These four correspond to the peg 4 in **Figure 1** and peg 7 in **Figure 2**. Separate path frame 75 contains a single pathway which moves horizontally at points 74 and 77 within said path frame. In this pathway cylindrical stem 76 rotates and moves vertically and in this case would at its top be connected to the KSM key which corresponds to that of the key-module key 34 in **Figure 6**.

Figure 11 is a cross-sectional top view of the base 58 of aKSM inputting device beneath pods 56 and 57 of **Figure 10**. These pods are beneath Beneath pod 84 is a path frame 81 inside which rotates and travels vertically a cylindrical stem 82 which is at its upper portion attached to pod 84 at point 83. Path frame 85 contains a pathway 88 which moves horizontally within said

path frame. Within said pathway **88** is a cylindrical stem **86** which rotates and travels vertically inside said pathway. Stem **86** is attached in this case to the key module **37** in **Figure 6**.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above. And while the invention has been described and illustrated as embodied in inputting devices, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

MAIL DATE CANCELLED
O.I.P.E. JC109
SEP 05 2002
TRADE MARK

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Application/Control Number: 09/835,884
Title of Invention: Key-Sound Module Inputting Device
Inventor: Arthur H. Sarkissian
Art Unit: 2673
Examiner: Lun Yi Lao

fig. 3.

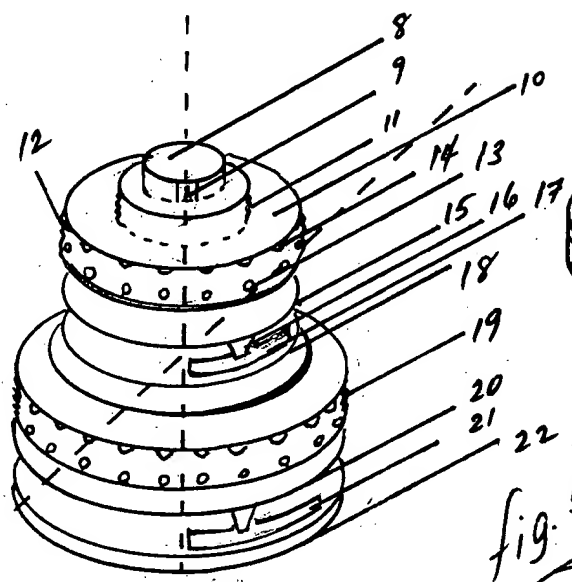


fig. 4

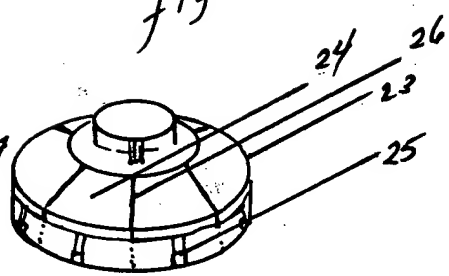


fig. 5.

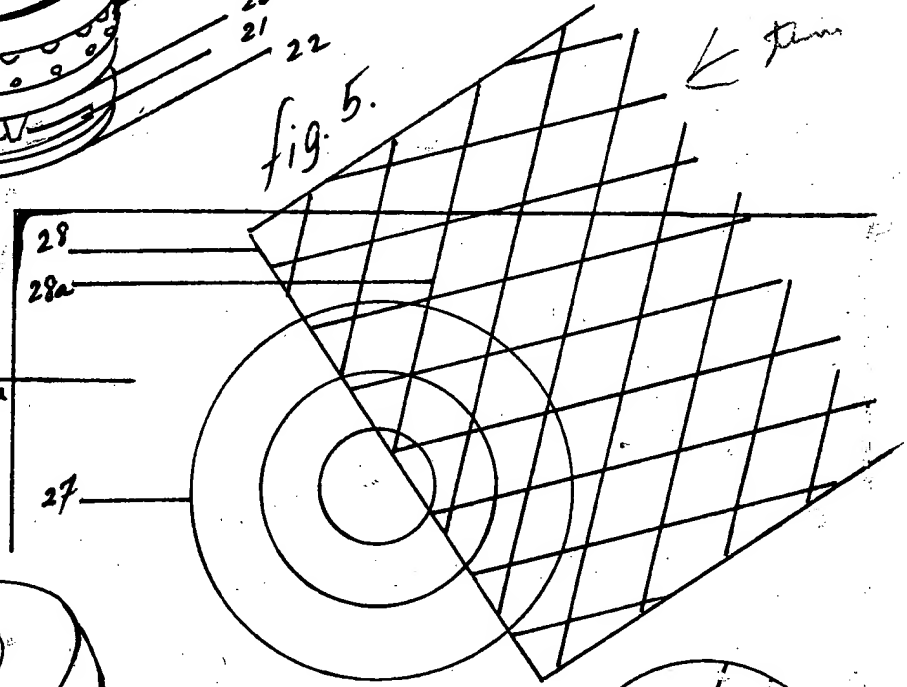


fig. 1

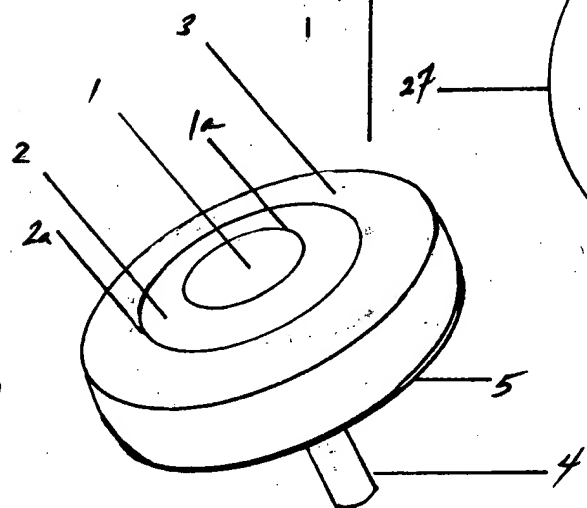
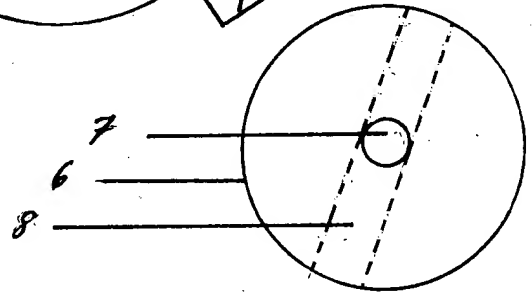
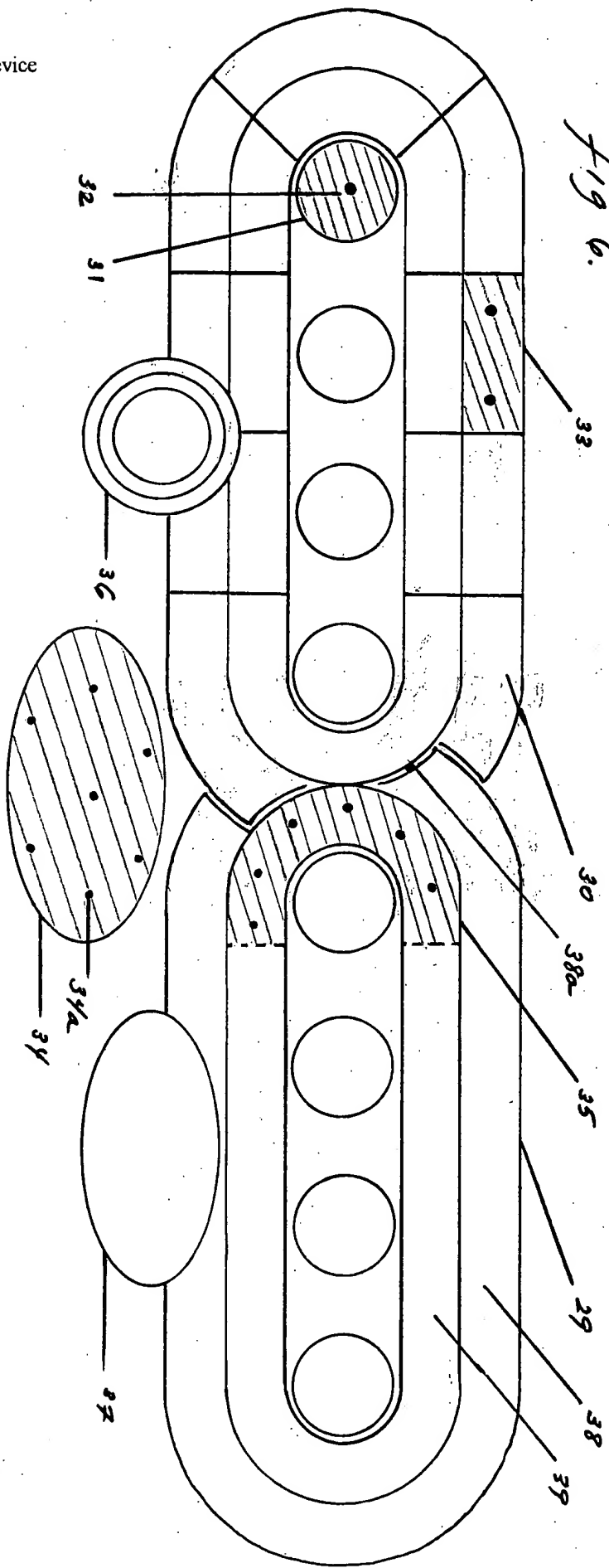
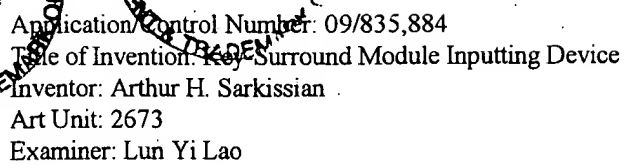


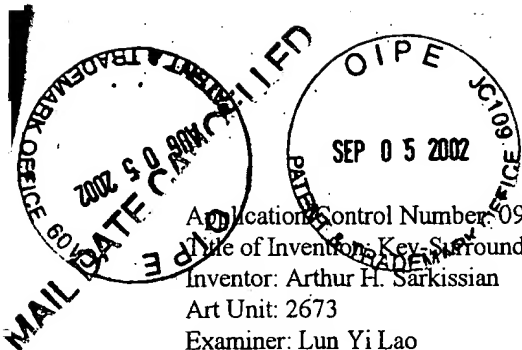
fig. 2.



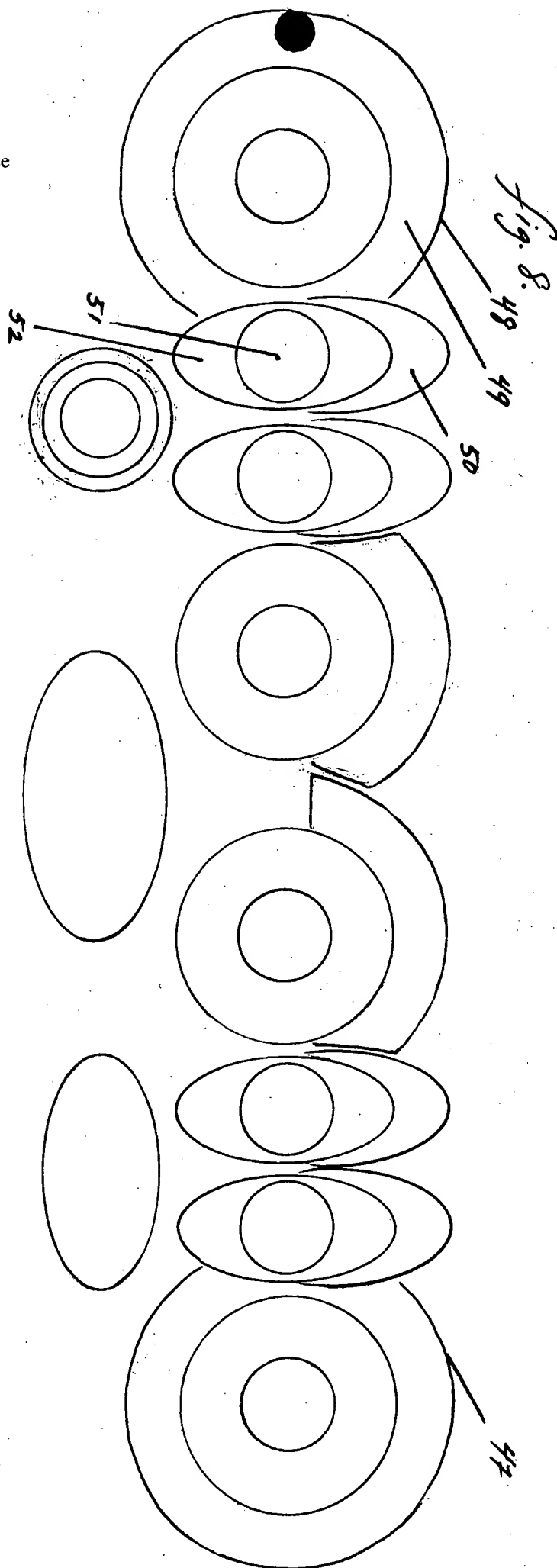
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 AUG 05 2002
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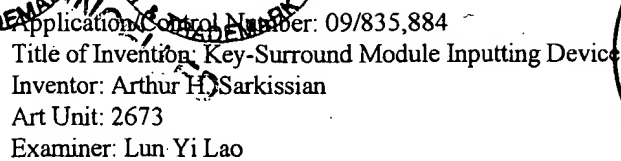


Fig. 10

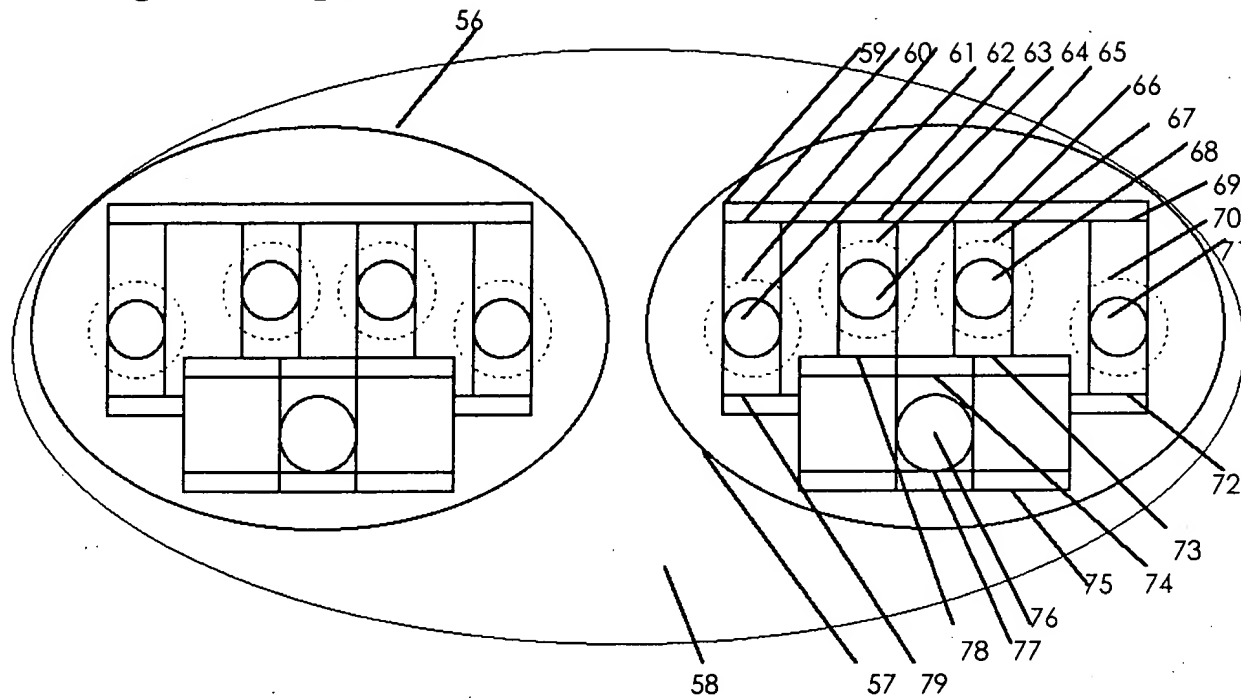


Fig. 11

